ABSTRACT

A method of reducing the amount of carbon monoxide in process fuel gas in a water gas shift converter. The method includes placing a high activity water gas shift catalyst system into a water gas shift converter, and passing the process fuel gas through the water gas shift converter in effective contact with the high activity water gas shift catalyst system and converting a portion of the carbon monoxide in the process fuel gas into carbon dioxide and hydrogen by a water gas shift reaction. The high water gas shift catalyst system includes a noble metal, a support comprising a mixed metal oxide of cerium oxide and at least one of zirconium oxide or lanthanum oxide. A promoter of yttrium, an alkali metal, or alkaline earth metal can be included. A support dopant can also be included.